



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Adress: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,336	04/28/2006	Andreas Luger	LUGER ET AL-1 PCT	5149
25889	7590	02/25/2009		EXAMINER
COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			BEHM, HARRY RAYMOND	
			ART UNIT	PAPER NUMBER
			2838	
MAIL DATE	DELIVERY MODE			
02/25/2009	PAPER			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/577,336	<b>Applicant(s)</b> LUGER ET AL.
	<b>Examiner</b> HARRY BEHM	<b>Art Unit</b> 2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 January 2009.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 11-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 11-18 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/2/09 has been entered.

### ***Response to Arguments***

Applicant's arguments with respect to the amended claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata (US 5,719,758) in view of Midya (US 5,801,519).

With respect to Claim 18, Nakata discloses a method for a solar inverter (Fig. 1 1) for feeding energy produced by a d.c. voltage source (Fig. 1 2) into an a.c. voltage grid (Fig. 1 3), in which

the energy produced by the d.c. voltage source (Fig. 1 2) is chopped in the form of a pulse width modulation by a bridge inverter (Fig. 1 5), by alternate switching of switching elements (Fig. 1 Q1-Q4) connected in parallel and connected in series, and this chopped energy is transmitted via a transformer (Fig. 1 6) which is connected between the switching elements (Fig. 1 Q1-Q4) that are connected in series, whereupon the energy transmitted is rectified (Fig. 1 7) and fed into the a.c. voltage grid (Fig. 1 3) via a buck chopper (Fig. 1 9), wherein, for a power adaptation, the switching times of the switching elements (Fig. 1 Q1-Q4) of the bridge inverter (Fig. 1 5) are controlled.

Nakata does not disclose how the dead time should be determined for the switching elements (Fig. 1 Q1-Q4). Midya discloses adjusting the dead time based upon minimizing the input current from the power source for power converters in solar array applications, wherein the dead time represents a time of the switching elements for switching over from one switching element to a further switching element connected in series, thereby ensuring that parasitic capacities stored in the switching elements of the bridge inverter can be completely recharged and no excessively long switching pauses can occur at the same time since the power consumption is minimized.

It would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the dead time of the bridge inverter based upon the input current to the bridge inverter such that the detected input current is minimized. The reason for doing so was "to minimize power loss because of switching", Midya column 12, lines 14-15).

With respect to Claim 12, Nakata in view of Midya disclose a method as set forth above wherein the dead time, and thus the switching times, are automatically based on the detected current from the dc source.

With respect to Claim 13, Nakata in view of Midya disclose a method as set forth above. See claim 12 for details.

With respect to Claim 14, Nakata in view of Midya disclose a method as set forth above wherein the dead time, and thus switching times, of the switching elements are set as a function of the mean value of the current flowing over the primary winding since the dead time is set as a function of the integral of the detected input current (Fig. 17 122).

With respect to Claim 15, Nakata in view of Midya disclose a method as set forth above where in the switches are activated appropriately (Nakata Fig. 1 Q1-Q4) at set points of time of the PWM cycle.

With respect to Claim 16, Nakata in view of Midya disclose a solar (Nakata Fig. 1 2) inverter (Nakata Fig. 1 100). See claim 18 for additional details.

With respect to Claim 17, Nakata in view of Midya disclose a solar inverter as set forth above wherein the device for detecting the current is formed by a current

Art Unit: 2838

measurement (Fig. 17  $V_{L(in)}$ ) unit on the primary side [voltage source input current side] of the transformer. See claim 18 for additional details.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata (US 5,719,758) in view of Midya (US 5,801,519) and further in view of Yang (US 6,597,159).

With respect to Claim 11, Nakata in view of Midya disclose a method as set forth above and do not disclose how the switching frequency is determined. Yang discloses adjusting the switching frequency based upon the sensed primary current. It would have been obvious to one of ordinary skill in the art at the time of the invention to lower the switching frequency at lighter load currents. The reason for doing so is "the frequency modulation in the PWM controller can reduce the power consumption of the power supply in light load and no load conditions", (Yang column 4, lines 15-19).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HARRY BEHM whose telephone number is (571)272-8929. The examiner can normally be reached on 7:00 am - 3:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm E. Ullah can be reached on (571) 272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2838

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry Behm/  
Examiner, Art Unit 2838